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ABSTRACT

This booklet focuses on screening tests that can be developed and used at educational assessment and resource centers, for assessment and early intervention with handicapped children and young people, especially in developing countries. The first part, titled "Guidelines on the Establishment of Educational Assessment and Resource Centres" by Kirsten Kristensen, offers a rationale and a procedure for establishing such centers for handicapped children, and describes the centers' functions and tools. Part II, "Methods of Testing and Teaching Handicapped Children and Youth in Developing Countries" by David Baine, addresses the importance of testing children by using items that assess skills useful in their own environment, notes that test development leads to the development of instructional programs, and advises that several assessment and resource centers should collaborate in producing suitable tests and programs. The final part, "Guidelines for Early Intervention Services" by Marigold J. Thorburn, discusses a rationale for early intervention, components of a system of preschool educational services, choice of early intervention models, early intervention technology, program personnel and facilities, and program organization and management. (JDD)

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Digest 22

Educational Assessment and Early Intervention for Handicapped Children in Developing Countries

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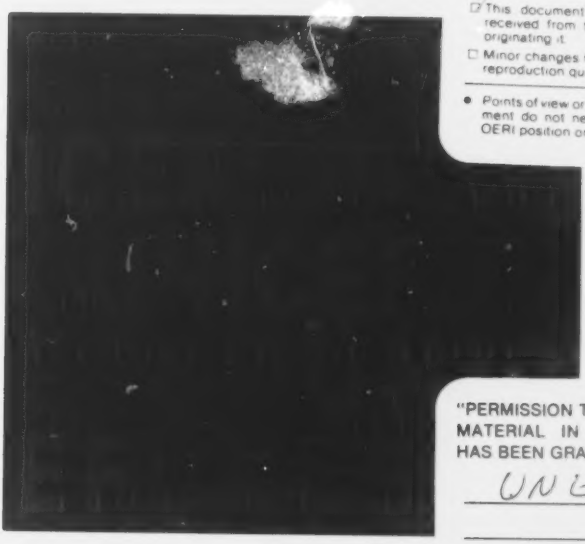

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Digest 22

Educational Assessment and Early Intervention for Handicapped Children in Developing Countries

by

Kirsten Kristensen
David Baine
Marigold J. Thorburn

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INTRODUCTION

by Joseph Kisanji
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Unesco Sub-regional Special Education Project
for Eastern and Southern Africa

The present work is an expanded and richer revision of the publication of the Unesco Sub-Regional Project for Special Education in Eastern and Southern Africa entitled Guidelines on Educational Assessment of Handicapped Children whose aim was to provide guidelines and orientations in this field of education for handicapped children and young people.

One of the principles of special education is that, if rehabilitation is to be effective and lasting, disabilities must be detected as early as possible and followed immediately by training and education.

Although early detection and intervention are essential for successful habilitation and rehabilitation of disabled persons, they are not being covered by special education and other related services in most developing countries. Detection of disabilities is usually done in an uncoordinated manner. Parents who suspect that there is "something wrong" with their child may send him/her to a herbalist, hospital, health centre or a special school. Assessment made at these centres may not be revealed to the parents and little advice given. Training of the child is therefore delayed until the child is of school going age or older when a social worker, special education teacher or a concerned family friend may inform parents of an existing special school or rehabilitation centre. Parents may make use of the information by enrolling their child at the school or the vocational rehabilitation centre depending on their understanding of the value of their child's training and education, their emotional state and the moral support they receive.

Attempts have been made in several developing countries to formalise procedures for assessment, referral and early intervention. For instance in Africa, Ghana established

in the mid-1970's a central Assessment and Resource Centre in Accra whose function was to assess children who failed to cope with school work as well as younger children referred to the centre by hospitals and parents. Guidance and counselling was being offered to parents and classroom teachers to enable them to understand the children and help them in the learning process. As the centre was located in Accra, the country's capital, it was unable to meet the needs of the whole country. The peripatetic service started in 1975 did not effectively liaise with the assessment and resource centre.

The School Psychological Services in Zimbabwe provide another example of assessment and support to parents and teachers. Besides its headquarters at the Ministry of Education and Culture, it operates from five centres spread throughout the country. This spread ensures that all schools are covered, a smooth referral system is established and a remedial education service developed.

In Kenya, there are now 17 Educational Assessment and Resource Centres established by the Ministry of Education, Science and Technology. More than 3,000 children have been identified since the centres became operational in September 1984. In addition to assessment, the centres also provide the much needed peripatetic services for schools which have integrated handicapped children. The Kenya Government plans to establish one centre in each district, giving a total of 42 such centres.

Assessment and early intervention programmes have a longer history in the Caribbean and Mexico. One contribution in this publication is based on experiences from the Caribbean islands.

Tests that can be used to assess children are many and varied. In general tests are systematic procedures for assessing behaviour under specified environmental conditions. Two categories of tests are usually used, norm-referenced and criterion-referenced, both of which can be used as screening tests. Norm-referenced tests compare people to each other on the basis of spread of scores for a given age group. They produce the once famous Intelligence Quotient (IQ) scores. Norm-referenced tests may be useful in comparing the effectiveness of a number of instructional programmes.

However, norm-referenced tests are not useful in evaluating progress through the sequence of a given instructional programme. They have very little use in identifying students' specific weaknesses and specifying remediation.

Criterion-referenced tests are of two types: objectives-based and instructionally-based. Objectives-based criterion-referenced tests are especially useful in showing pre-to-post gains for specific objectives being tested. Their usefulness for other purposes depends on the relevance of the test objectives to the instructional programme being used.

Instructional or programme based criterion-referenced tests are most useful in showing progress through a programme, in indicating pre-to-post gains and in identifying weaknesses and remediation. They are not useful in comparing different programmes.

A test is said to be used as a screening test when it is used to detect a disability in an individual. It mainly uses such test items as developmental tests, in the sensory, motor, socialization and language acquisition areas.

This publication focuses on the screening tests that can be developed and used at education assessment and resource centres. It encourages the setting up of such centres for developing instructionally based tests as well as teaching programmes. It also describes why and how to develop tests and curricula from an ecological inventory. Finally it provides the rationale, models and strategies for establishing early intervention programmes for the handicapped with special reference to developing countries.

The publication draws from the experience of three specialists, Mrs. Kirsten Kristensen, Professor David Baine and Dr. Marigold Thorburn. Mrs. Kirsten Kristensen is a clinical psychologist who helped develop Educational Assessment and Resource Centres for Handicapped Children in Denmark and Kenya and worked as a psychologist for many years in her own country and in Tunisia. In Part I of this document,

Kirsten Kristensen provides the rationale, a possible procedure for establishing and running educational assessment and resource centres for handicapped children, their functions and tools used by the assessment teams.

Dr. David Baine is Professor of Educational Psychology at the University of Alberta, Edmonton, Alberta, Canada. He has a very rich experience in the assessment field. He addresses himself to the importance of testing children using items embodying skills readily useful in their own environment. He argues that developing tests suitable for a given environment also implies and leads to the development of an instructional programme. Dr. Baine advises that several assessment and resource centres should collaborate in producing suitable tests and programmes to save time and reduce costs.

Dr. Marigold Thorburn's concern lies in the fact that early childhood and pre-school years are very critical in child development. Intervention programmes started as early as possible in the disabled child's life, involving its parents, siblings, the community and utilising all the available local resources, will limit the development of the disability into a handicap and promote intervention. An important point to note is that highly qualified professionals may not be necessary at all programme implementation levels.

This Digest is designed primarily to demonstrate to educational administrators and planners that it is possible to establish sound and inexpensive comprehensive assessment and intervention procedures and programmes within a short space of time using existing infrastructural facilities and human resources. It is also intended for teachers and other workers at these centres or involved in assessing handicapped children to assist them in constructing simple tests and remedial programmes.

Unesco is indeed grateful to the three contributors for sharing their experiences with the readers of this Digest. However, the opinions and ideas expressed by the contributors of this publication are their own and do not necessarily reflect the views of Unesco.

PART I

GUIDELINES FOR THE ESTABLISHMENT OF EDUCATIONAL ASSESSMENT AND RESOURCE CENTRES

by

Kirsten Kristensen

Clinical Psychologist

The Concept of an Educational Assessment and Resource Centre for Handicapped Children

What is an Educational Assessment and Resource Centre?

An Educational Assessment and Resource Centre is a facility set up at an existing special school, unit for the handicapped in an ordinary school, health centre or hospital to which parents can bring children with disabilities. The centre may be staffed by teachers, nurses, physiotherapists, occupational therapists, social workers and psychologists.

What Are the Functions of an Educational Assessment and Resource Centre?

An Educational Assessment and Resource Centre can perform five functions. These are assessment, parent guidance and counselling, in-service training, production of materials and providing support services to other schools.

1. Assessment

The function of an Educational Assessment and Resource Centre is to assess:

(a) *all children between 0-6 years, so that their identification can be achieved as early as possible;*

(b) *all handicapped children shortly before they reach school age, so that the right school can be chosen;*

(c) *children of school age, so that teachers can plan their education in the most effective way possible; and*

(d) *children in ordinary schools for the identification of those with learning problems.*

2. Guidance of Parents with Handicapped Children

Parents with handicapped children require information and guidance on how to train and cope with their handicapped child. After parents have had the child assessed at a centre, they should receive guidance on how to handle the child and where to look for help from the staff of the centre. In order to follow up this guidance, the parents can be invited to visit the centre again at a later date, or staff from the centre can make a home visit.

3. Parents' Courses/Parent Groups

Parents can also be invited to attend short parents' courses at the centre. These may be of one to two weeks' duration. During the courses the parents can be given information and advice, through practical demonstrations, on such aspects as how to handle a handicapped child and how to make simple instructional aids. These courses should be arranged by the Educational Assessment and Resource Centre but with the help of, if possible, a nurse or a doctor who should also see the children during the course. For groups of children to live fairly close together, self-help groups can also be encouraged, where parents of older handicapped children can be of great help to parents with young children.

4. Peripatetic Services

These are support services offered to handicapped children integrated into ordinary schools. Specialist teachers based at the centre can move from school to school to assist regular classroom teachers as well as teach handicapped children.

Many handicapped children can easily be integrated into ordinary schools with a little help from a peripatetic teacher who travels around ordinary schools in which handicapped children are integrated to give these children extra support. The peripatetic services should be based at the Educational Assessment and Resource Centres so that it should be possible to use the same specialist both as peripatetic teacher and as adviser for parents of young handicapped children.

5. Production of Materials

The Educational Assessment and Resource Centre may also have a workshop attached to it where testing and information materials, teaching and simple functional aids may be produced. The centres may hold models or samples of teaching and mobility aids which can be reproduced by local artisans, village polytechnics, prisons or other workshops. These materials and aids may be used to support or fit handicapped children being assessed and those enrolled in the surrounding schools. The workshops may be useful during in-service and other parents' courses where participants could practise making toys, mobility and other supportive aids.

WHY CHILDREN SHOULD BE ASSESSED?

The Educational Assessment and Resource Centre should be able to assess all handicapped children between the ages of 0-16 years.

JUSTIFICATION FOR ESTABLISHING EDUCATIONAL ASSESSMENT AND RESOURCE CENTRES IN AFRICA:

There is a great need in African countries for programmes which can provide services for the early identification and intervention of handicapped children, whether the child's handicap happens before, during or after birth. No handicapped child and no parents of handicapped children should be left to their own devices in caring for the child.

Educational Assessment and Resource Centres should therefore be established in all countries, with at least one or two in each province or region.

The justification for the establishment of Educational Assessment and Resource Centres is, among other things, that:

- *in most African countries the training and education of handicapped children begin only when the child reaches school age instead of at a much earlier age;*

- *today one third to one half of all disabled children in many special schools are incorrectly placed, due to lack of assessment before the children are admitted to the special schools; and that*

- *only a small proportion of handicapped children in many countries receive formal education.*

In future, therefore, children who are admitted into special schools must be those who have the greatest need for the special education placement. Consequently, the setting up of an educational assessment and resource service in African countries is a very necessary part in the overall development of special education services.

Setting up Educational Assessment and Resource Centres

Where to Establish Educational Assessment and Resource Centres?

Educational Assessment and Resource Centres are ideally situated in decentralized locations, so that no parents of handicapped children need to travel a long way to obtain educational help for their handicapped children. The country's existing infrastructure should be utilized. Thus, Educational Assessment and Resource Centres should, if possible, be set up at existing special schools. If no special school is available, an ordinary school, a mission station, a local health centre or a hospital could be used.

The advantage of using special schools as a base for Educational Assessment and Resource Centres is that they are likely to have:

- specially trained teachers capable of dealing with the parents of handicapped children;
- facilities for parents' and other courses;
- some facilities for assessing children; and
- information about handicapped children in the area.

Facilities Needed

In order to assess children successfully, a quiet assessment room is required. The room should be furnished with:

- a table;
- one lockable cupboard for files and materials;
- a low table, suitable for young children;
- some chairs; and
- a mat or mattress for activities requiring the use of the floor such as when testing babies.

Ideal assessment facilities would consist of one assessment room (7 x 7 m2), one small additional room for use during individual discussions with parents, or as an office, and one storeroom. A shaded waiting area for parents and children is also useful.

Assessment Materials

Most screening materials developed for use in other regions of the world are unsuitable for African

children, with the exception of hearing and vision tests. For each country or groups of countries a screening test should be devised to cater for children of 0-6 years and for children of school age, so that one can assess for hearing, sight, motor, language and social problems.

An educational test should also be devised for children of school age.

Intelligence tests should not be used at the Educational Assessment and Resource Centres.

How to Spread Information About the Assessment Centres?

Information about Educational Assessment and Resource Centres should be given to the public through all possible means. People should know about their existence in order for them to be optimally utilized.

District commissioners, chiefs, schools, churches, nursery schools, self-help groups, social workers, hospitals, health centres, the media, women's groups and parent-to-parent contact should be used to disseminate information on the location and services rendered by the centres.

The assessment teachers can also give short in-service courses about their work for teachers, administrators and health and social workers. Posters and sign boards should also be used to provide information to the public on special education in the particular country or region concerned. It may also be possible to organize in-service courses for groups of countries such as the Unesco Sub-Regional Project for Special Education established in December 1980 and based in Nairobi, Kenya, and the ILO/OAU sponsored African Rehabilitation Institute, at present based in Harare, Zimbabwe.

How to Train Assessment Teachers and Other Personnel for Assessment?

To train the teachers, preferably teachers who already have a special training and/or experience with handicapped children, and other personnel who take care of assessment, peripatetic work, and the training of parents, it will be necessary to hold in-service courses.

The courses should, among other things, deal with the following eight areas:

- *child development;*
- *orientation about various handicaps;*
- *orientation about assessment/screening concepts and procedures;*
- *practical training in assesment procedures;*
- *parent guidance;*
- *peripatetic services;*
- *simple medical treatment; and*
- *how to use the results of screening tests (in teaching and in the counselling of parents).*

Teachers who have no special training and no experience in dealing with handicapped children should have a training course of a minimum of three to six months. Serving special education teachers could be given a six-week in-service course spread in three two-week sessions, with four months between each course, so that the participants could apply what they have learnt and gained between each in-service course. In-service courses could be organized by the Ministry of Education or by the same body which administers the centres. Teacher training programmes should develop courses on assessment and peripatetic services so that graduates could be posted directly as assessment and peripatetic teachers.

Administration of an Educational Assessment and Resource Centre at Local Level

A local assessment committee should, if possible, be set up consisting of representatives from the assessment team, local administrators (education, health and social welfare) and perhaps also from the church or other relevant institutions. The responsibility for the day-to-day running of the Educational Assessment and Resource Centre should lie with the headteacher and the head of the institution at which the centre is based, but responsible to the district education authorities. It is advisable that an officer should be responsible for special education at the provincial and district level. Close working relationships should be established with other special and ordinary schools as well as personnel of local government administration (health, social welfare and others) and relevant organizations.

> *The work at the centre ought to be adapted to the actual need in the locality. It may often be necessary to set up more centres in the locality, at another health centre or primary school. The assessment teachers could also teach at least two days a week.*

Records - Files

A questionnaire should be filled in for each child assessed. It should contain all the necessary information about the child and his family (see pages 19-20).

The questionnaire, screening forms and other information about each child assessed should be kept at the centre. The file containing all information about a child should be transferred with the child when she/he moves from one centre to another.

Record Cards

The Ministry of Education should be kept up-to-date about the work at the centre. This could be done by submitting

a record card containing basic information about each child assessed. This information could provide a valuable basis for activities such as central planning, research and surveys. The record card could record the following information:

- Name of the assessment centre
- Child's name
- Date of birth
- Sex
- School
- Father's/mother's name
- Permanent address (father/mother)
- The child's address
- Test used
- Diagnosis
- Recommendations
- Date of assessment
- Name of assessor

Reports

A periodic report (e.g. quarterly) should be made by assessment teachers and sent to the Ministry with a copy to the administrative authorities in the area.

Administration of an Educational Assessment and Resource Centre at National Level

The Educational Assessment and Resource Centres should be administered by the Ministry of Education. The administration should ideally encompass close collaboration between all relevant ministries and organizations. As far as possible, the Educational Assessment Centres should be visited by an officer (e.g. Inspector of Special Education

Programmes) from the Ministry of Education in order that the centres can be continuously supervised, and regular short in-service courses held.

The daily administration of the assessment centres should lie with one person in the Ministry of Education. This person could be in charge of:

1. The overall administration of the autonomous centres in the country;

2. Collection of information from the centres;

3. Supervision of the decentralized centres in assessment, peripatetic services, parent guidance and referral through visits and circulars;

4. Offering advice to the centres on the planning of parents' courses (and participate in parents' courses, if necessary);

5. Collection and distribution of information materials to the centres;

6. Participation in the construction of assessment tests;

7. Planning in-service courses for administrators in education, teachers, nurses, social workers and other workers involved in the welfare of handicapped children;

8. Liaison with other relevant ministries;

9. Assisting in organizing in-service courses for assessment teachers on educational assessment, peripatetic services and parent guidance; and

10. Preparing various reports and analyses based on information collected from the centres for planning and administration purposes.

This set can be varied depending on the country's needs and resources. A national committee could also be set up.

Co-ordination of Existing Services

Various services exist in most African countries for handicapped children -mobile clinics, psychological services, mission stations, hospitals, special schools and units, play groups, and family support programmes, but these resources are not always effectively co-ordinated. One way of improving co-ordination and the optimal use of the various facilities would be to make each Educational Assessment and Resource Centre aware of the existing services available in the area as well as nationally. The personnel at the centres can then admit and refer children for the right kind of help. To this end a list of names of existing services, addresses and opening times should be made and kept at each centre.

Close collaboration between relevant Ministries is also important especially because assessment at the centres should be carried out through the collaboration and cooperation of:

(a) special education teachers;

(b) personnel from social services, and

(c) personnel from health services (doctor, nurse or other health worker).

Construction of Assessment Tools (Screening Test Materials)

How to Construct a Screening Test

A screening test should be as independent as possible of culture. It should encompass hearing, sight, motor, language and social development subtests. A screening test should take into account the milestones in Child Development.

A Hearing Test could consist of the following items:

(a) Can a very young child turn its head towards or react to sound?

(b) Can a child, occupied by other things, turn its head towards or react to low frequency or high frequency sounds? It should be easy to find materials which can produce sounds of high and low frequency. Putting different things into boxes, cans or bottles which can produce different sound frequencies could provide useful test materials.

(c) Can a child (four years and above) repeat words and numbers whispered to him when the child stands with its back to the assessor at various distances?

For cooperative children from five years of age it may be possible to use an audiometer for the screening of hearing.

A vision test could consist of the following items:

(a) Can the young child follow a flash light?

(b) Do the pupils become smaller when the child is in the light?

(c) Can the child grasp a coloured object moved in front of his/her face?

(d) Can the child pick up small objects placed in front of him/her?

(e) Can the child pick up transparent beads?

It should be noted that for the assessment of distance and acuity, the use of the most popular vision test in the country is recommended. This could be an E-test or C-test Snellens Chart or a picture test.

A Motor Test (for children of 0 - 6 years) could consist of items based on normal child development. In a screening test there should only be a limited number of items at each age level.

A Language Test (for children of 0 - 6 years) could also consist of items based on normal language development with no separate testing of the understanding of the spoken language.

A Social Development Test (for children of 0 - 6 years) could consist of items relevant to the normal social development of a child. For example, the child demonstrates the following behaviours at given ages:

- 6 months - smiles
- 3 years - enjoys play with other children
- 5 years - imitates adult behaviour

School Age Children

The screening test for vision and hearing can be used for children of school age. For children with difficulties like mental retardation all subtests of the screening test can be used.

Further Assessment

Screening tests could be supplemented by clinical and diagnostic tests to determine the severity of the disability.

The Case History Questionnaire

A complementary way of assessing a child with disability is to obtain information about the child from parents and guardians using a structured questionnaire (form). The questionnaire to be filled in for each child assessed should contain all the necessary information about the child and its family. The information sought includes the following:

- the child's name, age, address and school;
- the parent's name and addres;

- information about the pregnancy and birth;

- history of the child's development;

- description of the child's handicaps e.g. when the parent first observed problems;

- hearing, visual, physical and/or mental problems, if any;

- description of the problems if indicated and kind of treatment previously given to the child.

The same basic questions should be used for such problems as vision, mental and physical disabilities and epilepsy; and

- if the child is at school, description of the child's progress at school.

Conditions and Procedure for Assessing Children

How to Assess

It is very important to take both the assessment of a child and the discussion with the parents seriously. The result of the assessment and the advice given to the parents and teachers may well have a great influence on the child's future.

For successful assessment the following conditions and procedures should be followed as much as possible:

1. The room used for assessment should be well lit and quiet.

2. A sign placed on the door saying "ASSESSMENT - DO NOT DISTURB" will ensure that there is little noise outside the assessment room.

3. The child should be allowed to sit comfortably.

4. Furniture (the chair and the table) should be of the right size for the child. Place the chair very near the table so that the child can easily use the table.

5. Try to make the child as relaxed as possible. If the child is afraid, create rapport with him/her through play.

6. When the child is relaxed, the assessment can begin. Always try to begin with items which the child is likely to be able to do.

7. Praise the child for correct responses. Never tell the child off if he/she makes mistakes.

8. It will often be a good idea to assess young children whilst they are sitting on a mat, mattress or carpet on the floor.

9. The child should be given only one object at a time and when the child has finished, the object should be taken away and the next object handed to the child.

10. In many cases, the mother or father will have to participate in the assessment.

11. The minimum number of people possible should be present in the room and participate in the assessment.

12. When the parents are interviewed the most useful information from them will be obtained when they feel confident and comfortable. Often parents do not like to discuss their feelings towards their child and the various diseases involved if there are other people present.

13. When parents are asked questions from the questionnaire, some questions may have to be explained. The parents will often answer more openly if they feel that the situation is more like an informal conversation.

After Assessment, What Next?

Inform Parents

After the assessment of a child the result of the test should be explained to the parents, telling them what might be the best way forward to the child. It is often possible after the assessment to guide the parents about how they can train their child. If a child is assessed at the school the teachers should be given this same information.

Follow-up Action After Assessment

The assessment of a child is of no use unless action is taken afterwards. But what kind of action?

1. *After each assessment, the parents should be guided on how to train their child and what further action could be taken.*

2. *The parents can be requested to visit the assessment centre again for further guidance or possibly for re-assessment of the child.*

3. *The parents could be visited at home by an assessment teacher.*

4. *Parents' courses could be held.*

5. *Parents' groups could be esablished for parents who live fairly close together, starting from the centre's neighbourhood.*

6. *A child could be integrated into an ordinary school or be advised to stay in his present ordinary school. One should remember that the integration of handicapped children into ordinary schools with appropriate support is the only way to solve the great pedagogical problem of "education for handicapped children". We should always*

ask ourselves the question: After school, what will this child's future be? The answer is often that the child will stay in the community where he would have stayed had he not been handicapped. In order to be an integrated part of the community, the child needs experience of life and the people in his own community. The best way for him to learn this is to be integrated at all times -before, during and after schooling.

7. In some areas with a greater number of handicapped children, it will be very useful to establish a special class (unit) in an ordinary school. Such a unit should be an ordinary classroom, where a teacher can teach a group of not more than 15 handicapped children.

8. Some children can easily be integrated into ordinary schools or units, but the walking distance between home and school is too long. For these children small homes or resource centres can be established. A small home is an ordinary house often made by the community but situated near a school, where handicapped children can stay from Monday to Friday, or in some countries, the whole week. A housemother should take care of these children.

9. A child could be referred to a special school, if his/her problems are profound and his/her needs cannot be catered for in an ordinary school.

10. Many children need to be referred for medical examination or treatment.

11. Some children need to be provided with special aids e.g. hearing aids, glasses or walking aids.

PART II

METHODS OF TESTING AND TEACHING HANDICAPPED CHILDREN AND YOUTH IN DEVELOPING COUNTRIES

by

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In the following discussion, methods of developing ideal educational tests and curricula are described. These methods are suitable for children, youth and adults. In some situations, many of these methods may be readily adopted. In other circumstances, the ideal may be difficult to achieve. In these circumstances, the ideal may represent a long-term goal to work toward. Various methods of working toward the ideal are described later.

Ecological Inventory

An ecological inventory is used to identify the essential skills a person needs to perform effectively now and in the future in the least restrictive environments.

This information is used to develop functional curricula and criterion referenced tests of those curricula. Some of the advantages of building tests and curricula on the basis of an ecological inventory are described below.

A curriculum developed from an ecological inventory lists skills that are functional. Functional skills are those that a person requires to perform effectively in particular environments. Functional skills permit an individual to perform a variety of tasks that are essential to a broad and rich life experience. For example, functional skills include basic survival as well as social and recreational skills. An ecologically-based curriculum lists skills that are functional in the environments in which an individual lives now and in which s/he will likely live in the future. These environments may include: a) home, b) community, c) school, and d) vocational. Each skill in the curriculum is taught and tested in the same form as it is required in each environment.

For example, a curriculum developed from an ecological inventory of an African village may list functional skills such as caring for cuts, scrapes and infections; storing food and water; collecting firewood; lighting a kerosene lamp; swimming; preparing for entry into a holy place, and greeting an elder. Curricula adopted from North America and Europe often include tasks such as stacking blocks, stringing beads or making picture puzzles. These tasks are not generally functional (are not required) in an African village. The generic skills taught in these tasks (e.g. eye-hand coordination, colour and shape discrimination) are not taught in the same form as they are required in the natural environment. Research evidence indicates that learning to perform these nonfuctional, generic skills often does not result in any improvement in the performance of functional skills.

An ecologically-based curriculum prepares a student for the least restrictive, future environments in which s/he may have the opportunity to perform. The least restrictive environments are the most demanding environments in which a student could be expected to perform following instruction. The curriculum lists skills designed to prepare students to perform tasks that are as close as possible to those required of normal functioning persons of the same chronological age.

A test developed from an ecological inventory provides a direct measure of the skills listed in an ecologically-based curriculum. Consequently, test results indicate which skills required in a person's current or future environments s/he has already learned, which skills remain to be taught, and which skills to begin instruction.

The steps performed in an ecological inventory are as follows (note: these procedures are adapted from Brown et al., 1979):

1. *A target group is identified. A target group is the particular group for whom a curriculum or test is being developed.*

The target group is defined in terms of age, type of handicap, level of functioning and location (e.g., village or city). For example, separate ecological inventories would be required for: a) children ages: 1 month to 3 years; 4-6 years, etc. b) students with mild or severe mental retardation, and c) students living in villages, cities, slums or wealthy areas.

2. *A survey is made of the home, community, school and vocational environments in which each student lives.*

3. *In each environment, the subenvironments in which members of the target group are currently performing are identified. Also identified are the least restrictive environments in which the handicapped students could learn to perform in future. Least restrictive environments are as close as possible to those in which nonhandicapped people of the same chronological age generally perform. For example, in a village community environment, the subenvironments may include the community well, the market, the temple, the river where fish are caught and the field where crops are grown.*

Usually, when predicting future environments, it will be sufficient to predict where students will be in one year, except where: a) major environmental changes are predicted such as movements from rural to urban areas, or b) where a large number of skills are required and/or where the skills required may take a long time to acquire, for example, vocational skills. In these cases, depending on the learning ability of the students in the target group, it may be desirable to predict where the students will be in 3-5 years.

4. *The tasks in each subenvironment are then listed. For example, in a village market the tasks may include a) finding the correct stall; b) choosing different types of fruit and vegetables; c) selecting ripe, undamaged produce and e) making payment.*

The analysis of subenvironments and tasks is performed through direct observation of behaviour in situations in which handicapped and nonhandicapped students usually perform. In addition, parents and teachers may be interviewed to determine where, when and how students perform various tasks.

It may be wise to conduct the first inventory on the largest target group of handicapped students. The results of this first analysis will be useful to the largest number of students. Also, the largest group of students with handicaps will likely have the most similarities with other groups of handicapped students. As a result, the information from the first analysis will assist the analysis of other groups of handicapped students.

Before beginning a large analysis, it may be wise to conduct a limited study with a small number of students in a familiar environment such as the home. The analysis may be expanded to other environments and students following the development of efficient procedures.

To develop curricula that teach skills that are chronologically age-appropriate and that permit students to perform in the least restrictive environments, ecological inventories are conducted of both handicapped and nonhandicapped students of the same chronological age. Functional tasks performed by nonhandicapped students that handicapped students could perform as a result of instruction or prosthetic (mechanical, electrical, sensory, motor, cognitive) assistance may be included in the curriculum.

This part of the analysis may be most efficiently conducted by following the steps listed below:

a) Define the target group of students as described above.

b) Identify a broad variety of different types of families that have at least one handicapped child from the target group and at least one other nonhandicapped child of the same sex and similar chronological age.

c) Perform an ecological inventory for both the handicapped and nonhandicapped children in each family; study both current and future environments and skills as described above.

d) Identify those functional tasks performed by the nonhandicapped children that it is likely handicapped children could perform with prosthetic assistance or instruction.

e) Follow the steps listed below to decide if these tasks should be included in the curriculum being designed for students in the target group.

5. *The tasks for both handicapped and nonhandicapped students within each environment are listed according to their relative importance. On the following scale, the relative importance of each task is rated by circling either 0, 1 or 2 for each consideration. As each task is rated, the total of all the circled numbers for that task is determined. The task with the highest number may be the most important task for the student to learn. (Technical note: the 0, 1, or 2 rating for each item is arbitrary. Perhaps for some items, students or environments, the weightings should be higher or lower. For example, the weightings for "survival skills" may be increased to 0, 3 and 5. As it is, the scale may help initial decisions. With experience, the weights may be changed to better suit local circumstances).*

Task Importance Rating Scale

	The importance of each task may be judged by its likely contribution to:	none	some	a lot
a.	learning functional skills	0	1	2
b.	increasing social acceptability	0	1	2
c.	learning chronological age-appropriate skills	0	1	2
d.	learning survival skills	0	1	2
e.	improving performance in a variety of environments	0	1	2
f.	increasing opportunities to interact in a variety of environments	0	1	2
g.	increasing opportunities to interact with nonhandicapped peers	0	1	2
h.	increased ability to fulfill frequent task demands	0	1	2
i.	increased ability to perform in less restrictive environments	0	1	2
j.	improved health	0	1	2

6. *In the final stage of the inventory, the steps required to perform each task are listed. These steps are identified through task analysis. Task analysis involves breaking-down a task into the sequence of individual steps a student must learn in order to perform the task. A task analysis may be done by: a) studing the steps other people take to perform the task, b) thinking-through each of the steps in a familiar task, and/or c) performing the task. It is best to study the manner in which several competent people perform a task to find the simplest way*

to perform the task. Also, by studying the way that people who are having difficulty perform a task, a teacher can identify problems to avoid during teaching.

The results of a task analysis of the steps involved in treating a bite from a poisonous snake are listed below:

a) Keep heart rate low; if necessary, gently move away from the snake and sit down with the bite lower than the victim's heart.

b) To assist selection of a suitable antidote, if possible, note the type (e.g., water moccasin or python) or characteristics (e.g., size, color, pattern, and shape) of the snake.

Initial decisions:

c) If help is not available, proceed with step f).

d) If nonmedical help is available, and assistance is required for step f) and/or g), proceed with step f) and use the help as required; after the necessary assistance has been received, if medical help is nearby, send for medical assistance.

e) If nonmedical help is available, if direct assistance is not required and if medical aid is nearby, send for medical help immediately.

Primary treatment:

f) Restrict circulation of the poison; as soon as possible, tie a bandage, a shoelace, a piece of rope, a strip of cloth or a belt around the arm or leg 2-4 inches above the bite, but not on a joint. Avoid stopping the blood flow, make the constrictive band loose enough so that a forefinger can just slip under the constriction. If the constriction is properly applied, there will be some oozing from the wound. As the swelling around the bite moves up to the constriction, add an additional constrictive band 2-3 inches above the first.

g) Promote bleeding and drainage of the poison from the limb:

(i) if possible, sterilize a knife with a flame; make a cut 1/8 to 1/4 inch deep and 1/3 to 1/2 inch long along the length of the arm or leg at each of the one or two fang marks. In the wrist, hand and foot take special caution to avoid cutting a muscle, nerve or tendon;

(ii) if possible, suck the poison and blood from the bites; avoid having anyone suck the poison who has open sores in his/her mouth; continue suction for at least 60 minutes;

(iii) spit all of the fluid from the mouth.

Secondary treatment: omitted for brevity.

A task analysis that has been performed well will produce a list of all of the steps required to perform a particular task. No unnecessary steps will be listed and all steps will be listed in the order in which they should be performed.

7. *Following the task analysis, each of the tasks identified in the ecological inventory may be written in the form of an instructional objective. For example, a simplified instructional objective for treating poisonous snake bites is shown below.*

Given: i) six trials in which stimulated snake bite marks are located any where on the front or rear of the leg or arm or on the hand or foot, ii) a knife, and either a belt, rope, bandage, strip of cloth or shoelace, iii) randomly one of four pictures of common, local varieties of poisonous snakes, and iv) the presence or absence of nonmedical assistance; performance: the student will i) identify the snake and/or describe its characteristics, ii) locate

the poison fang marks, iii) state how best to use the nonmedical assistance available, and iv) follow the treatment procedure; standards: (ordinarily standards would be specified for each step in the performance; for sake of brevity, only the standards relating to tying the constriction band will be listed below): on each of the six trials: tie the constrictive band 2-4 inches above the bite, not on a joint, and loose enough so that a forefinger can just slide under the constriction; in addition the student must describe what to do if swelling approaches the constriction. Note: in an actual test, the student may be required to demonstrate use of a knife by cutting into a banana in which simulated snake bite marks have been located.

In addition to writing instructional objectives for each of the tasks, at the same time or at a later date, instructional objectives may also be written for each of the steps identified in the task analysis. For example, step objectives could be written for i) identifying various common snakes and their physical characteristics, ii) identifying poisonous fang marks, iii) tying a constrictive band, etc.

> *An instructional objective describes the conditions (the givens) in which a task is to be performed. The performance is described as observable, measurable behaviour the learner is to make (e.g., tie the constrictive band). The minimum acceptable standards of performance are also specified in measurable terms (e.g., "2-4 inches above the bite", and "so that a forefinger can just slip under the constrictive band"). Describing the list of steps in the form of instructional objectives produces a precisely described ecologically-based curriculum and a criterion referenced test of that curriculum.*

Given a curriculum described in the form of a series of instructional objectives, a teacher would know exactly what skills to teach. For example, if a teacher was teaching students to treat bites from poisonous snakes, the teacher would teach the students to perform under the conditions described in the objective, to the standards specified.

The list of instructional objectives may also be used as a criterion referenced test. To use the list of objectives as a test, the teacher would simply present a student with the conditions described in each objective, ask the student to perform in the described manner and judge the performance by the specified standards.

The list of objectives may be used as either an achievement or a diagnostic test. When used as an achievement test, the teacher would evaluate the student's ability only on the objectives for tasks. If a student failed to perform to the standards of a particular task objective, a diagnostic test could be made of the student's ability to perform each of the step objectives for that particular task. For example, if during achievement testing a student failed to pass the task objective for treating a bite from a poisonous snake, diagnostic testing could be done by evaluating the student's ability to perform each of the related step objectives such as i) identifying various common snakes and their physical characteristics, ii) identifying poisonous fang marks, iii) tying the constrictive band, etc. The diagnostic test would indicate which specific steps in the task the student was unable to perform and which specific steps to teach the student.

In Situ Testing

> *"In situ testing" is the repeated assessment of a person's skills in the environments in which s/he would not usually be required to perform now and in the future.*

For example, if the test related to the selection of ripe, undamaged fruit of specific types the student would commonly be required to choose in a market, the test would be conducted in an actual market. Simulated conditions may also be used. However, the greater the differences between the real conditions (e.g., an actual market) and the simulated conditions (the classrooms), the less valid the test of

performance would be. The test may be repeatedly presented over several days to get a consistent assessment of a student's actual ability. Tests of a number of different skills may be conducted during the same period of time.

The purposes of in situ testing are as follows:

a) to assess which of the tasks and steps in a sequence a learner can perform to the standards specified in the natural environment under the conditions described in an instructional objective;

b) to assess changes in the student's performance as a result of commonly occurring changes in the natural environment;

c) to assess the student's learning style; to determine what behaviours s/he has that will influence learning (e.g., short attention span; receptive language); and

d) to assess the effect on the student's behaviour of various instructional methods and materials. Use of various methods and materials may be repeatedly tested on the student to establish the most effective method of teaching in natural environmental conditions.

Teaching a student to perform skills in the actual conditions in which s/he is eventually expected to perform following instruction reduces the problem of generalizing learning from the teaching environment to the natural environment. Generalization of skills from a classroom to the natural environment is one of the major problems in education.

Rationale for In Situ Testing

a. *The performance of handicapped children is often greatly influenced by the environment in which teaching and testing is done. A clinic is a very unusual environment. When testing is done in a clinic, the tester may*

often see behaviours that occur in the clinic but do not usually occur in the natural environment. Similarly, behaviours that are common to the natural environment may not occur in the clinic. As a result, remediation may focus on behaviours that occur only in the clinic and fail to be concerned with behaviours that are common to the natural environment.

b. The behaviour of handicapped children is often quite changeable. Thus, testing conducted during a short clinical session sometimes results in remediation focussing on atypical behaviours that occurred during the testing period. To get a more accurate assessment of a child's typical behaviour, repeated assessments should be conducted under the variety of naturally occurring conditions.

c. Similarly, remedial techniques that may seem to work in a brief clinical evaluation of the methods may not be effective under the conditions in which teaching must actually take place. Therefore, remedial methods thought to be effective should be repeatedly tested in the conditions in which they must eventually be used.

Approximating the Ideal

As we mentioned at the beginning of this chapter, in some situations, many of these methods of developing ideal educational tests and curricula may be readily adopted. In other circumstances, these ideals may be difficult to achieve. In these circumstances, the ideal may represent a long-term goal to work towards.

Obviously, ecological inventories and in situ evaluations require considerable time, skill and expense. The task may

appear overwhelming. However, there are constructive alternatives. In the discussion that follows, a number of methods of working toward the ideal are described.

Other Methods of Ecological Inventories

1. Do a conceptual ecological inventory. If time is not available for teachers to study the different environments, they can at least think about and make lists of the functional tasks they think will be required now and in the future in the home, community, vocational and school environments. In addition, parents can be asked to help identify tasks that are required in the home and community environments.

   The relative importance of the skills identified in this manner can be evaluated using the previously described "task importance rating scale" (TIRS). Initially, rate several tasks on each of the TIRS considerations; total the ratings for each task and compare the results. As teachers become more familiar with each of the considerations made on the TIRS, it may no longer be necessary to actually rate each task on the TIRS. From experience, the relative importance of various tasks may become immediately apparent. The more important skills can be put into the curriculum. Several teachers can work together on a conceptual ecological inventory and task importance rating.

2. Small trial of ecological inventories can be done. Teachers may select a small but important subenvironment in their community. They may then observe handicapped and nonhandicapped students from the same family perform in this subenvironment (follow the previously described methods of identifying three or four families).

3. Different groups of teachers in other classrooms, schools or communities could do ecological inventories on different subenvironments and share the results with teachers in other locations.

4. To reduce problems arising from a failure of skills to generalise, wherever possible, it is advisable to use in situ teaching. Teach skills in the form and in the environments in which they must eventually be performed. Where it is difficult to teach in the actual environment, build simulated environments. Build a simulated environment that is as similar as possible to the actual environment. Teach the skills in the simulated environment. For example, if it is difficult to teach in an actual market, build some simulated market stalls in or near the school. Note, however, the more differences that exist between the conditions in the simulated and natural environments, the more difficulties there will be with generalisation. Wherever possible, after a student has learned to perform a task under simulated conditions, test his/her ability to perform under natural environmental conditions. The results of this testing may reveal that some additional instruction under natural conditions is required.

5. It is not necessary to begin describing all tasks in the form of lengthy instructional objectives. Begin with a simple form of task description and with experience, expand and refine the description. For example, several levels of task description relating to the task of following instructions are listed below.

   a) The student will be taught to follow simple instructions.

   b) The student will be taught to follow 3-5 step simple instructions.

   c) The student will be taught to follow 3-5 step instructions such as:

      i) finish these five arithmetic problems, then get your reader and complete the questions on page 65;

      ii) go to the market and buy 3 ripe mangoes, 2 pounds of rice, bread and 6 eggs.

d) The student will follow 3-5 step instructions such as:

i) finish these 5 arithmetic problems, then get your reader and complete the questions on page 65 (task begins immediately; steps must be completed in order);

ii) go to the market and buy 3 ripe mangoes, 2 pounds of rice, 2 loafs of bread and 6 eggs (task begins immediately; order of completion is not important);

iii) after school, collect the chicken eggs, clean the dung from the shed, put the cows in the shed, milk the cows and water the garden (task beginning is delayed; some tasks must be completed in order).

The student will be tested on 3 examples of each type of instruction. (Remember, the task is one of following instructions of up to 5 steps, not one of also learning how to perform the individual steps; the student must have previously and recently demonstrated the ability to perform each of the individual steps).

Standards: to be considered correct:

i) each step in each set of instructions must be performed (performing 85% of the total number of separate steps over all of the tests is acceptable);

ii) where order is important, each step must be performed in the correct order (corrections to the order are not acceptable, the order must be correctly performed the first time).

Obviously, objectives a) and b) are too brief to be of much value to either testing or instruction. Obviously, too, objective d) is of far more value to both testing and teaching. However, objective d) requires considerable time and experience to write. Therefore it is suggested that, if possible, begin with an objective like c) and in time, improve the objective to approximate d).

Relevance of In Situ Testing

Repeated testing over several days in the natural environment is expensive, time-consuming and often difficult. Nevertheless, testing in the natural environment can provide a far more accurate assessment of a child's actual abilities than can be obtained in short-term, clinical testing.

1. With checklists, step-by-step guidelines, and forms to fill in, parents and others might assist in the observation and recording of children's behaviour in the natural environment.

2. Stimulated testing situations may be established. As was previously mentioned, the more differences there are between the conditions in the simulated and the natural environments, the less representative the test results will be of the student's actual abilities. Thus, simulated conditions should be as close as possible to those in the natural environment.

   One method of establishing simulated conditions is to set-up a number of testing and teaching stations in the testing centre. For example, one room or area could be arranged in the same manner as a section of a market. A broad variety of functional skills could be tested and taught in this station.

3. A student and his family may spend several days at an assessment centre during which time testing is done, various teaching methods are tried and the parents are trained in the use of various teaching and behaviour management methods.

Adopting Existing Tests and Curricula

In some cases, it may be necessary to adopt and modify existing tests and curricula designed for other environments such as Europe and North America. The following tasks are frequently found in the academic, preacademic, readiness or cognitive sections of tests and curricula designed for these environments:

1. build a tower of cubes;

2. put pegs in a pegboard;

3. reproduce a repeated block or bead pattern;

4. complete an interlocking 10 piece picture puzzzle;

5. match a triangle, circle and square;

6. string 4 beads in 2 minutes.

For the following reasons, it is recommended that tasks of this type should be removed from tests and curricula designed for developing countries. These tasks are usually included in curricula and tests because they can be used both to teach and test generic skills. Generic skills include: finger dexterity, color and shape discrimination, and eye-hand coordination. These skills are considered to be generic because they are a part of many tasks.

Generic skills are sometimes referred to as readiness skills. Readiness skills are generic skills students are taught to "get them ready" to learn other tasks involving the same skills. It has been thought that by teaching a student to perform tasks involving generic or readiness skills, performance will automatically improve in other tasks involving the same skills. For example, students are sometimes taught to sort circles, squares and triangles to "get them ready" to discriminate letters and words in reading.

Considerable research shows, however, that a student may improve his/her ability to perform these generic skills without improving performance in other tasks sharing common skills. For instance, improvement in sorting geometric forms frequently does not result in an improvement in discriminating letters and words. It is better to teach reading directly. If the goal is to teach students to discriminate letters of the alphabet, discrimination of letters

of the alphabet should be taught directly. It is unnecessary to teach geometric form discrimination first because handicapped students are already behind in achievement and slow to learn.

Sorting colour cards is a typical generic task although there is little demand in most environments to sort colour cards in this manner. A student may learn to sort the colour cards but be unable to sort clothing and ripe fruit that have slightly different colours from those of the colour cards. Instead children who are taught to sort fruit, clothing or other functional sorting tasks directly, learn colour sorting and a functional sorting skill at the same time.

Generalization of learning from one task to another is one of the major problems encountered in teaching both normal and handicapped persons.

Thus, generic skill tasks should be removed from the curriculum because:

1. *the skills are not functional;*

2. *they do not result in an improvement in required skills;*

3. *direct teaching is more efficient.*

For similar reasons, the following tasks in a curriculum or test should be replaced with tasks that are more functional in the environments of developing countries.

1. The child jumps raising both feet off the floor at the same time.

2. The child walks forward or backwards on a balance beam.

3. The child stands on one foot without aid for 4-6 seconds.

Test and curriculum items that are too vague and non functional, such as "imitate a three action motor sequence", should be revised.

Teaching students to imitate holding their arms over their heads, out to the sides, and out in front usually does not result in demand to perform this task in the natural environment. Alternatively, the students could be asked to imitate using a village well.

To ensure that all teachers teach functional skills, curriculum and test items of this nature should be rewritten as instructional objectives as in the previously described examples.

PART III

GUIDELINES FOR EARLY INTERVENTION SERVICES

by

Dr. Marigold J. Thorburn

Introduction

Interest in early intervention for handicapped children is of relatively recent origin in developing countries. As a result it is still rather an experimental field. As in special education, we have tended to adopt Western models which may not always be appropriate, cost effective or even feasible.

This paper draws on experience mainly in the small territories of the Caribbean. It outlines some of the principles and constraints, but detailed descriptions of "how to" are not given. For the latter, it would be necessary to consult more detailed manuals.

In general terms, the type of service that is established in any country or area should be one that is relevant to the needs and existing resources of the area. It is therefore advisable that:

1. A situation analysis of the status of mothers and children, and particularly handicapped children should be carried out;

2. The goals of full participation and equality for people with disabilities should be at the forefront of the mind when making decisions; and

3. The system should be set up in a way in which it can be continued in the future. In any new programme the new pattern established at the beginning is very important for the implications of the future of the programme.

Philosophical Issues

This may not seem relevant in a set of guidelines but it is important that in anything that is done for disabled persons especially when they themselves are not able to

participate, we should remember that any service that is developed should be with the goal of full participation and equality of opportunity. Segregated services will therefore be of low priority. The criterion of "the least restrictive environment" should be applied.

Definitions

The terms "impairment", "disability" and "handicap" as used by WHO are used in this paper. It can be said that the major purpose of early intervention is the prevention of the escalation from impairment into disability and disability to handicap.

Purpose and Rationale for Early Intervention

It has been shown that early intervention for disabled children can usually be very beneficial in:

1. Helping to dispel negative or unrealistic parental attidudes towards disability.

2. Helping to generate a mutually satisfying relationship between parents and child.

3. Preventing further handicaps that frequently occur later on due to mismanagement.

4. Preparing children for school in a more integrated setting.

5. Helping to prevent institutionalization.

When carried out in integrated settings, it should also assist normal children develop healthy attitudes towards the disabled or different child. It should also facilitate the maximum use of the most important period of life for learning.

Intervention can include medical, therapeutic, social and psychological as well as educational components. However

in developing countries, as will be seen later, it may be necessary to combine all these skills and functions in only one or two people.

Early intervention can be carried out by primary and secondary groups of peoples. The three main primary ones are:

1. Parents, especially the mother or primary caregiver.

2. The handicapped children.

3. The teacher or day care workers where children are not in the home for the major part of the day.

Secondary groups, depending on the places where intervention is provided, can include:

- Siblings
- Community groups
- Health and other human service workers
- The general population

In all these groups the major purpose of intervention will be to facilitate the maximum development and integration of the child into his or her own community. One of the major misconceptions about early intervention is that it can only be done by a highly qualified multidisciplinary team of professionals. Clearly this is not a feasible proposition for developing countries and fortunately other alternatives are available.

Essential Components of a System of Pre-school Educational Services

A basic model is recommended for an early intervention programme which really requires the development of a system, if possible within existing service delivering systems. This model includes:

1. Prevention of handicapping conditions

2. Early detection of developmental delays in children at risk

3. Early identification of problems/impairments

4. Assessment of the nature and severity of problems

5. Designing an individual programme plan

6. Implementing an individual programme plan

7. Evaluating the effectiveness of the programme

8. Re-programming, if necessary.

Who undertakes the above tasks, where they are carried out, and what techniques will be designed and can be used and modified according to the situation, infrastructure and resources available. Maximum use of local and minimal importation of outside resources is strongly recommended.

In the next section more detailed consideration of the choices and some of the issues are given.

Choice of Early Intervention Models

There is a wide variety of appropriate low cost community based approaches from which can be selected the most feasible and relevant in a given situation. The type of model chosen will firstly depend on the group of whom the intervention is primarily intended, i.e., the child itself, the parent(s), the parent/child dyad*, the family as a whole, the community or a specific professional or para-professional group. If

* The word "dyad" is used to identify the focus on the inter-relationship between the mother (or caregiver) and the child, rather than a single individual.

the child is not the primary target, the child's needs must be kept foremost in mind or the specific outcomes for the child may get lost in other programme goals. In the young child under three years, the primary target group should be the mother and child. In the older child, professional and para-professional training may be the main strategy.

Other factors which influence the choice of a model to be used will include the setting where the programme can be most effectively implemented (e.g., the home, the school, the clinic, the day care centre). This will depend on socio-cultural factors and the locally available facilities.

Depending on these choices a range of at least nine models is available:

Models	Target Group
1. Home visiting	Child and mother
2. Home day care	Child and caregiver
3. Multi-purpose centres	Child and others
4. Pre-school centres	Child, caregiver, teacher
5. "Add-on" to nutrition and health programmes	Health workers
6. CHILD-to-child	School children
7. "Add-on" to adult education	Parents, community workers
8. Women's groups	Parents, volunteers
9. Mass media	Parents, general population

Existing programmes that are mainly child oriented have utilized models number 1, 2, 4, 5 and 6. Essential features to ensure effectiveness however should include family involvement, consistency and continuity of the programme. Although no comparative evaluations of the efficacy of the

different models in developing countries are available, it seems likely that numbers 1, 2 and 4 will be the most effective given the intensity of the programme. In all these models it may be possible to integrate handicapped children into existing services.

Programming Constraints

Many of the following constraints militate against effective programme implementation:

1. The personnel may already be fully occupied or overburdened in their existing work. Rehabilitation activities require continuous and often time consuming tasks.

2. The attitudes towards disabled children may be very negative; militating against acceptance of new tasks.

3. Para-professional and community level workers need professional supervision if the programme is to have quality, consistency and effectiveness.

4. The system may already be too rigid to accept another dimension of programme. The older and more institutionalised the system the greater the inflexibility. The alternative to "grafting on" is the development of a special cadre of personnel who are particularly motivated such as parents of disabled children who have shown concern and involvement in their own child's problems or disabled people themselves. This can work in densely populated areas but not so well in scattered rural districts because of the smaller numbers of disabled children within reach of one person.

Other Programming Issues

1. It will be noted that no mention is made of special centres for early intervention or rehabilitation. These tend to be more costly, more professionalised, more centralised and therefore inaccessible to the majority

of families in need. Transportation of disabled children is also a major problem in decentralized rehabilitation programmes. Nevertheless, this is an alternative model available.

2. No mention is made of specified disability groups for intervention. Here choices should not be made in favour of providing for one disability group rather than another. To give priority to one category rather than another would be discriminatory. By virtue of local specific problems it is likely that one type would be more common than others but efforts should be made to ensure that all children in need would be served, and especially those from the poorest families.

3. No mention is made of residential or custodial services. This is because these tend to be very costly in relation to the effectiveness of their programme, they isolate the child from the normal environment and because of cost and lack of skilled and motivated manpower, tend to be poor in quality. Herding together of large numbers of severely handicapped children tends to be dehumanizing for the children and demoralizing for the care staff.

Early Intervention Technology

There are three aspects of early intervention that can and should be incorporated into the programme.

1. **General promotion of child development through early stimulation and play**

   All children need this to learn and develop, so play activities such as those described in the booklet of the WHO Manual can be used universally. Disabled children should be allowed and encouraged to play with normal children. For the child with severe developmental delays whether due to mental retardation, cerebral palsy or multiple disabilities, intervention techniques and learning activities may need to be more specifically targeted at precise objectives and broken down into small steps. This implies evaluation of the child's development in a more detailed fashion separating the

development process into five (or more) domains: cognitive, self help, motor, language and socialization. A very useful model for this is the Portage Guide for Early Education which has been widely used and adapted in several developing countries.

2. Intervention techniques appropriate to specific disabilities

(a) Children with disabilities in learning may require particular learning techniques involving the use of reinforcement and other behaviour management techniques. They may also need special training in self help skills such as toiletting, feeding, dressing, and bathing. This can be done by task analysis and teaching the process step by step, using reinforcement and training techniques.

(b) Children with hearing disabilities will require auditory training and other forms of communication. The ideal in more developed countries will be amplification of hearing through hearing aids. This unfortunately is still an area of high technology and will not be available to most children in developing areas. Auditory and language training, and other forms of communication are covered in the WHO Manual booklet on disabilities of hearing and speech. These can also be used for children with speech and language delays that are not due to hearing impairment. However, many people feel that this aspect of intervention is the least effective and therefore the most frustrating.

One of the vary common causes of delays in the development of speech and language is environmental deprivation. This is commonly associated with lack of stimulation from the mother and sometimes malnutrition. The important need is to help the mother and family recognize what is happening and to motivate them to remedy the situation by talking more to the child and trying to elicit and listen to the child's efforts at speech. It may be very difficult to change behavioural patterns of this kind.

(c) Children with usual disabilities need specific training in self help skills and in mobility. These are also covered in the WHO Manual.

(d) The child with moving disabilities may require a wide range of training, exercises and adaptive aids depending on the part or parts of the body which are affected.

Poliomyelitis is the single commonest cause of physical/moving disabilities in children in the developing world and there are special aspects to this. The problem of cerebral palsy (CP) also needs to be specifically addressed because children with CP usually have several disabilities, the most common ones being moving, speech and learning. The motor abnormalities of CP are complex and require well designed adaptive aids. Measures required for these two major types of moving disabilities are very different, so diagnosis is important.

(e) The child with fits may be perfectly normal in other aspects and frequently the handicaps that result are due to the frightened or attitudinal reactions of others, so that the child may be overprotected or hidden away. An important aspect of fits is their prevention by drug control. Finally, there are basic precautions which children must be taught to take to protect themselves in situations where a fit may be dangerous such as swimming, climbing, in traffic or near fires. These aspects are addressed in the WHO booklet on fits.

3. Motivation

In the case of young children, much needs to be done in relation to the negative attitudes, distress and shame that parents may experience in reaction to a disabled child. These responses often delay the acceptance of the child and may cause complete rejection, thus delaying or disrupting the development of positive efforts to help the child.

The whole process of early intervention requires extra effort and attention by the parent (quite apart from the additional time and expenses involved). This implies that the mother must be motivated and able to become the child's teacher, by no means always a natural attribute. The process of maturation from simply loving one's baby to becoming the teacher varies quite a lot between one parent and another. Where a child has a disability as well, this process may be interrupted or significantly slowed down.

It is in these circumstances that other parents of disabled children can be very effective interveners. Having had the experience themselves, they can offer a "sympathetic shoulder" to new parents. Parent-to-parent counselling is now becoming an important feature of voluntary associations, and costs very little.

Strengthening the Mother-Child Dyad

This is an area of early intervention which has recently received increasing attention. It focuses on the development of mutually satisfying interaction between the mother and the child. It uses and strengthens the evolution of maturity of the mother to not only love and care for her child but to observe, respond and stimulate and further reinforce the child's learning and play appropriately to his level of development.

Personnel in Early Intervention Programmes

From the section on "Choice of Early Intervention Models" above it will be seen that the type of model that is selected for implementing an early intervention programme will influence the type of personnel needed and their preparation and training. One comforting aspect is that all the people do not have to be professionals. The manpower model study in Canada showed clearly that not more than 25% of personnel in any programme need to be professionally trained, 70% of the work can be effectively carried out by people with less than two years training.

For non-formal models (i.e. home based, clinical, etc.), a very flexible approach can be taken. Almost any person who is literate, a competent mother who has emphathy, but not pity, for less fortunate persons can do the jobs required. In most developing countries there will be no particular cadre of workers who have the necessary skills but almost anyone, whatever their background, can learn them. Health workers, teachers, child care attendants, parents, interested volunteers and disabled people have all been trained to do this work in different developing countries.

Where? Perhaps the first and most important principle is that training takes place on the spot. The practice of sending people away, except at the higher levels, and where there is no local model or programme to work in, is to be deplored. At the community level there is no need to leave the community because the people can be trained with the disabled children with whom they will work. The more practical the training, the more it will be effective and long-lasting.

What? The content of training is based on the skills and knowledge the person will need to carry out the tasks required of him or her. The role and job of the Community Based Rehabilitation (CBR) workers (at whatever level he/she may be) has to be analyzed. If the person is already trained in some aspects of human service then other skills will need to be supplemented, e.g., teachers will require more clinical and counselling skills as well as rehabilitation techniques. Health workers will require teaching skills. A sample training matrix is shown in Table 1 and it can be seen that there is a common core of information that should be supplied to all groups. It can be adapted for whoever needs training.

There are a number of resource materials and audio-visual productions that can be used for training courses. One of the most comprehensive is the WHO Manual, "Training Disabled People in the Community" which covers the training of the CBR workers themselves in the skills of identification, assessment and the use of the training packages, as well as motivation of the familie. and the community and referral

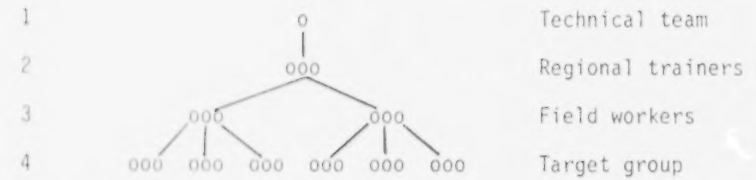
to more specialized or higher level services. Smaller individual training booklets and samples of courses are also available from other sources while a very comprehensive and detailed approach to "how to train" is found in "Helping Health Workers Learn" by David Wagner.

When and for how long? For people already working in pre-school services, short courses or modules interspersed with practical work are ideal. It is not usually feasible for people to be released for training for any length of time and if staff are short, the courses may have to be repeated in cycles. The modules are organized and arranged, so that they follow sequentially with the practice and acquisition of the new skills. So, for example, a basic core course, or orientation will come first, followed by skills of identification. With these skills the trainees can go out and survey their community and identify their clientele. They can then be taught how to assess their clientele and can practice on them. They will now be ready to develop and carry out intervention programmes, find trainers in the family and begin to work in the community to mobilize other areas of assistance such as schooling and jobs. Record keeping will be taught in the process and information about how programme is structured will be given.

It is unlikely that lengthy pre-service training will be required unless a totally new group of people are beginning to work together in a new programme. In this situation supervisory and professional level staff can teach and learn along with the community level basic care workers. In this way more effective interaction and understanding of the nature of each other's role is achieved.

Who? Once a policy is established that involves the training of human service workers, additional courses and material can be added to the regular generic training programmes, so that all new personnel coming into service have the required knowledge and skills. WHO has outlined the extra time that would be required for the training of Primary Health Care (PHC) workers, nurses, teachers and rehabilitation supervisors and suggestions for course material and content have been proposed in various country reports.

Training for "Going to Scale": Technical assistance from outside may be required to develop a manpower training programme, which will be essential if the programme is to expand. There are different levels of input of technical assistance.



A more frequent practice is to inject technical assistance at level one only. In the long term, however, it is more effective for programme stability and quality to intervene at levels 1, 2 and 3 over a period of time. As stated elsewhere, it is likely that a new programme will take 3-5 years before it enters a stable and self perpetuating state, and the continuity and stimulation of a more extended period of intervention will enhance the success of the programme.

The number of persons required will depend on the size of the target population and whether the community workers are working full time or part time on rehabilitation work. Since a child in a programme needs to be visited at least once every two weeks the full time person could manage 15-20 families if they are not too scattered geographically. The part timer may only have 6-8.

Earlier it was indicated that para-professional field or direct care workers need to be supervised by a professional. Here again flexibility is desirable. It has been the experience of many early intervention programmes that almost any human service professional can, with additional skills which can be acquired in short training courses, provide adequate supervision. Rehabilitation generalists need a variety of skills, counselling, social work, teaching, caring, therapeutic and behavioural as well as practical skills in

making devices. In addition, they will need training in the specific techniques that are used in the programme. In this work it is more important to have a clear job description and a flexible innovative person who is willing to learn and solve problems, than to have a highly trained professional therapist or psychologist, though these of course can be a great help.

In training field level personnel, the expertise of professionals and specialists in existing disability programmes can be used to good advantage since they will then have an interest and a stake in the success of the programme.

Programme Checklist

1. *Is there a community infrastructure that could be used to provide personnel for early intervention programmes?*

2. *What kind of training do they have?*

3. *What additional skills will they need to become competent in rehabilitation tasks?*

4. *Are there people in the area that could teach those skills?*

N.B.: If a programme is already functioning and staff have to be released for training it may be necessary to split the training into smaller modules with gaps between so that the staff are not overloaded during training.

Table 1 - TRAINING MATRIX

WHAT	WHO					
	Team of Technical Professionals	Nursing	Teaching	Community Workers	Parents & Dis.people	Admin.
Core Course of Gen. orientation *	+	+	+	+	+	+
Identification of Disability (Skills) *	+	+	+	+	+	
Children *	+	+	+	+	+	
Adults +	+	+		+	+	
Early Detection *						
Knowledge	+	+		+	+	
Skills *	+	+		some		
Early Intervention *	+					
Knowledge		some pre-school				
Skills						
Assessment * +	+					
Children	+			lower		
Adults	+			level		
Special Education		65	+			

Behaviour Management *	+ high level	+ princi-ples	+ med. level	+ basic level	+	princi-ples
Motor Disability +	+			+	+	
Communication +	+		+	+	+	
Daily living						
Skills *	+			+	+	
Mobility +	+	min. level				
Vocational Training +	+		+	+	+	
Counselling	+	+	+	+	+	
Data Collecting * and analysis +	+	Minimum level				

* Training can be provided by the author in these topics

\+ will require other professional inputs

Facilities

Again the model that is chosen for the programme will influence the type of facilities needed. In non-formal programmes no additional facilities are required, though space will be needed to hold clinics, test children, store toys and records and to conduct training. None of these have specialized requirements.

Buildings should be made accessible for physically disabled persons and a small workshop to make adaptive aids may be needed for fitting children with physical disabilities.

The reduced need for specialized facilities has its advantages and disadvantages. The obvious advantages are in cost, both of building and maintenance, and cost effectiveness in usage. However, people working in rehabilitation often need to demonstrate what they are doing -not only for the purpose of obtaining support and recognition but also to show parents and workers who are negative or sceptical, what can be done and how it can be achieved. For the purpose of solidarity and mutual self support parents and disabled persons may need a place that is identified with their efforts to regain status and assert their rights.

Community based or neighbourhood centres providing training, information and a place to meet and demonstrate, may be crucial in some areas to develop a community spirit. Such centres should be located in central areas easily accessible by public transport.

Organization and Management: Continuity, Equitability and Linkages, Expansion

One of the major failures of traditional rehabilitation services is their poor coverage. It is estimated that not more than 2% of the disabled population in developing countries are receiving rehabilitation. Because of their specialized nature and the costs of replication and expansion they are

not only limited in geographical coverage to large towns and cities. They usually specialize in one disability, in a narrow age range (school age children) and in specific types of care or training.

> *The result is inequitability, big gaps and sometimes overlaps. Because they have often originated separately from the concern of different groups, there is poor coordination of services and resources are not utilized in the most productive ways. Schools and institutes are frequently isolated and they provide an atmosphere that is quite different from that of the regular life of the community.*

The WHO-CBR approach, integrated into the health service infrastructure can effectively deal with many of these shortcomings. However, it does imply a widely developed health infrastructure onto which rehabilitation can be grafted. In many developing countries this infrastructure may not exist and in others, where it does, it is not flexible enough to accommodate the additional responsibility. However, this does not preclude the development of CBR services. It does mean that more careful planning may be required, with full utilization of resources both formal and informal, governmental and non-governmental. In countries with less infrastructure, the development of equitable rehabilitation services will take much longer but that should not preclude the planning of programmes and the initiation of pilot schemes.

Integrating Disability Services into Other Community Services

Community human services and activities can either be part of an official or government infrastructure (health, education or social welfare) or be informal; private, voluntary or non-governmental. Even in very poor societies there are usually some of the latter group.

However, the more formal, well established and institutionalized the service is, the more difficult it is to project or integrate a new component. People have developed

habits of work and job responsibilities that they do not wish to change. A strong policy has to be articulated and implemented right down the line. The more concerned and skilful people will have to be given responsibility to develop the programme and monitor it. Finally, training must be provided for all levels of personnel involved to give them the skills they will need to carry out the new tasks. Programmes of this kind have been developed in Barbados in the child care programme, in St. Lucia in the health service and are planned for Belize. In all these, a series of training courses have been planned around the specific people to be involved in participating in the programme. It will take at least five years to implement such a programme depending on the scale of the project and the availability of staff to be released for training.

In non-formal situations, it is also possible to develop integrated services. In Haiti, a collaborative project between UNICEF and the 'Centre d'Education Spéciale' in Port-au-Prince has involved the training of child minders in neighbourhood informal child care and pre-school centres in disability prevention and rehabilitation. In Mexico and Jamaica programmes are being generated in the community by disabled people and parents because of the absence of any other programme in which childhood disability intervention programmes appear to be feasible. If there is an existing maternal child health (MCH) infrastructure, it should be possible to introduce the tasks of prevention, early detection and intervention.

Going to Scale

The initiation of a new programme is an exciting and challenging venture generating high motivation and early results. In a developing country it is very rarely possible and probably inadvisable to develop too rapidly from project to programme. Early intervention even in developed countries is still in a relatively experimental stage.

Rapid expansion without a plan for management and manpower preparation will create a great strain on the system resulting in inefficiency, poor quality, frustration and attrition.

The general principles of "going to scale" involve education, motivation and mobilization. They include:

1. *The availability of an acceptable and effective technology*
2. *An imaginative marketing plan*
3. *The presence of political will*
4. *The development of an appropriate strategy*
5. *The development of a clear organizational plan (including manpower development)*
6. *Measures for sustaining momentum.*

Digest No. 11(+)	Handbook for Educational Buildings Planning, by Rodolfo Almeida
Digest No. 12(+)	An Introduction to the Educational Planning Process, by Ananda W.P. Gurugé and Dieter Berstecher
Digest No. 13(+)	From Planning to Plan Implementation: An Introduction to Educational Programming Techniques, by Ananda W.P. Gurugé and Dieter Berstecher
Digest No. 14**	Moving Towards Universal Primary Education and Literacy, by a Joint Unesco-UNICEF Working Group
Digest No. 15*(+)	Manual for Teachers of Young Children and Other ECCE Personnel, by Edith H. Grotberg
Digest No. 16*	Extending Basic Learning Opportunities: Challenge and Response, by Veda Prakasha, Ananda W.P. Gurugé, Amewusika K.B. Tay
Digest No. 17*	Education and Primary Health Care, by Bushra Jabre
Digest No. 18**	Early Childhood Development - Two papers on UNICEF Policy and Programming by UNICEF
Digest No. 19*	Improving the Quality of Basic Learning Opportunities: Challenge and Response by Veda Prakasha, Ananda W.P. Gurugé, Amewusika K.B. Tay
Digest No. 20*	Education for Child Survival and Development in Africa Contributions by R. Kagia et al.
Digest No. 21*	Some Recent Ideas on School Feeding Contributions by C. Chicot, B. Levinger, R. Loewald, R. Sack, S. Turner and J. Frost

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* *Exists in French*
** *Exists in French and Spanish*
(+) *Currently out-of-stock*